REMARKS

The Applicant has studied the Office Action dated August 28, 2003. Reexamination and reconsideration of this application is requested. By this response, claims 1 - 47 are pending in the application. Claims 43-47 have been added.   It is submitted that the application is in condition for allowance. Reconsideration and allowance of the pending claims in view of the following remarks are respectfully requested. In the Office Action, the Examiner:

(1)   rejected claims 1-4, 7-9, 12-15 under 35 U.S.C. § 103(a) as being unpatentable over Martin (U.S. 3,906,454); and

(2)   objected to claims 5, 6, 10, 11, 19, 20, 24, 32, 33, 37, and 38 as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims;

(3)   rejected claims 16-18, 21-23, and 25-27 under 35 U.S.C. § 103(a) as being unpatentable over Martin (U.S. 3,906,454); and

(4)   rejected claims 28-31, 34-36, and 39-42 under 35 U.S.C. § 103(a) as being unpatentable over Martin (U.S. 3,906,454);

As an initial matter, the Applicant also wishes to thank Examiner Iqbal for indicating the allowable subject matter of claims 5, 6, 10, 11, 19, 20, 24, 32, 33, 37, and 38.

Overview of the Current Invention

Preferred Embodiments of the present invention provide an improved method, apparatus and computer readable medium for providing systematic and reliable monitoring of interrupt routines that are critical for the operation of a programmed system. The present invention discloses the use of two or more program sequences where each of the program sequences are monitored iteratively. The first program sequence is made to monitor the execution of the second programmed sequence. Also, the second program sequence is made

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to monitor the first program sequence. In one embodiment the first programmed sequence incorporates the steps of resetting a first counter associated with the first program sequence. The second program sequence includes resetting the second counter and incrementing the first counter. This cross-monitoring of the first program sequence with the second program sequence ensures that a failure in the activation of a particular program sequence is detected by monitoring the counter by the other corresponding i.e. first or second sequence.

In order to more particularly point out these features, the patentably distinct features of independent claims 1, 16, and 28 (with similar elements in claim 35) have been reproduced below for convenience.

at least a first and a second programmed sequence, each to be executed iteratively,

wherein said first programmed sequence is made to monitor the execution of said second programmed sequence, and said second programmed sequence is made to monitor said first programmed sequence.

Rejection under 35 U.S.C. §103(a) Martin

As noted above, the Examiner rejected claims 1-4, 7-9, and 12-15 under 35 U.S.C. § 103(a) as being unpatentable over Martin (U.S. 3,906,454). The Applicant respectfully traverses this rejection.

As the Examiner correctly states in the Office Action at page 2 *"As per claim 1, [Martin] He does not explicitly disclose that the first programmed sequence is made to monitor the executing of the second programmed sequence and vice versa. He Martin teaches [....] as stated above a software monitor that gathers data, provides data selection and that monitored data entries are directed by program instructions inserted in the instruction stream."* Turning to the present invention, independent claims 1, 16, and 28 (with similar elements in claim 35)

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recite:

> "at least a first and a second programmed sequence, <u>each to be</u>
> <u>executed iteratively</u>"

Martin is silent on two or more programmed sequences set to run iteratively. In contrast, the execution of the first and second program sequence iteratively ensures that each of the first programmed sequence and the second program sequence do indeed go through their respective iterative cycles as expected using the monitoring procedure.

Martin explicitly describes an <u>external</u> monitoring system, see Martin FIG. 1. The present invention can be implemented in the "Prior Art Computer" 10 of FIG. 1 of Martin using software steps.

The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole." Unlike the external systems as described by Martin, the use of a first and a second programmed sequence, each to be executed iteratively, monitor each other as a cooperative check-and-balance system. These co-dependent monitoring roles of the iterative first and second programmed sequence eliminate the need to an external monitoring system as described by Martin.

The present invention is much simpler to implement than the external monitoring system taught by Martin. In fact, Martin *teaches away* from using software in the prior art computer 10. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).[1] In contrast, Martin physically separates the

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[1] The Federal Circuit held a reference did not render the claimed combination *prima facie* obvious because *inter alia*, the Examiner <u>ignored material, claimed</u> <u>temperature limitations</u> which were absent from the reference. See MPEP

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computer 10 whose events are to be monitored from the monitoring system. Communications between the prior art computer 10 and the monitoring system is via wire connections 11 (for hardware) and 12 (for software).

Further, the Applicant respectfully submits the Examiner is respectfully co-founding the use of an external "software monitor" comprising at least a first and second programmed sequence. Martin discloses a "software monitor" which is independent of the software being monitored. These are effectively two program sequences as the Examiner suggests, however, only one of these two software sequences is in fact the monitor, not both of the programs as the Examiner suggests. Stated differently, even if we interpret Martin to disclose a a first and second programmed sequence, Martin does not each or suggest each of these sequences monitoring each other. Martin teaches only one program sequence as the external program monitor. The external monitor program as taught by Martin is not itself monitored as recited in independent claims 1, 16, and 28 (with similar elements in claim 35) by

> wherein said first programmed sequence is made to monitor the execution of said second programmed sequence, and said second programmed sequence is made to monitor said first programmed sequence.

Martin is silent on this inventive check-and-balance system of at least a first and second programmed sequence running iteratively with cross checks.

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§2143.01 In re Fine, the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph, combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference; however the court found there was no support or explanation of this conclusion and reversed.

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It is important to note that the check-and-balance system of mutual monitoring as recited in the independent claims 1, 16, 28 and 35 is not limited to just a first and a second programmed sequence. In another embodiment, the present invention teaches two or more i.e. multiple, monitoring programs, each monitoring another monitoring program to create a "round-robin" monitoring condition. See Specification at page 11. This embodiment is an extension of the mutual monitoring of just two programmed sequences. Newly added claims 43-47 clarify this embodiment.

Further it is noted, in the Office Action on page 2, the Examiner is pointing to Martin at col. 2, lines 50-52. This is an external monitoring system. The Applicant respectfully requests that the Examiner point out with particularity where in FIG. 9, Martin teaches <u>at least a first and a second programmed sequence, each to be executed iteratively</u> so as to monitor one another. The Applicant respectfully does not understand how the Examiner can attribute to on the one hand the mutual monitoring of <u>first and second programmed sequences</u> as recited in independent claims 1, 16, and 28 (with similar elements in claim 35) of the present invention with the *monitoring of data entries directed by program instructions* according to Martin. Martin teaches the matcher logic section 14 and counter control filters 18. See for example Martin at Col. 4, line 67 though col. 5, line 25. Martin is clearly describing internal management functions, for determining how the gathered monitoring information is to be exploited. This is different than reciprocal monitoring between <u>first and second programmed sequences</u>.

Accordingly, independent claims 1, 16, 28 and 35 of the present invention are distinguishable over Martin for the reasons set forth above.

Claims 2-15, 17-27, 29-34 and 36-42 depend from claims 1, 16, 28 and 35 respectively. Since dependent claims contain all the limitations of the independent claims, claims 2-15, 17-27, 29-34 and 36-42 distinguish over Martin, as well, and the Examiner's rejection should be withdrawn.

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CONCLUSION

The remaining cited references have been reviewed and are not believed to affect the patentability of the claims as amended.

In this Response, Applicant has amended certain claims. In light of the Office Action, Applicant believes these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicant respectfully submits that the claim amendments do not limit the range of any permissible equivalents.

Applicant acknowledges the continuing duty of candor and good faith in the disclosure of information known to be material to the examination of this application. In accordance with 37 CFR §1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicant and its attorneys.

Applicant respectfully submits that all of the grounds for rejection stated in the Examiner's Office Action have been overcome, and that all claims in the application are allowable. No new matter has been added. It is believed that the application is now in condition for allowance, which allowance is respectfully requested.

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PLEASE CALL the undersigned if that would expedite the prosecution of this application.

Respectfully submitted,

Date: January 28, 2004   By: _____

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